DOCUMENT RESUME

ED 247 547 CS 007 762

TITLE Reading Textbooks and Student Progress: A Follow-Up Study.
INSTITUTION District of Columbia Public Schools, Washington, DC. Div. of Quality Assurance.
PUB DATE Aug 84
NOTE 33p.; For a related document, see ED 245 203.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Academic Achievement; *Basal Reading; *Beginning Reading; Educational Research; Elementary Education; *Reading Instruction; *Reading Materials; Reading Material Selection; Student Evaluation; Student Improvement; *Textbook Evaluation; Textbook Research; *Textbooks

ABSTRACT

To examine the interactions between particular reading materials used most frequently with students in grades one through six and beginning reading instructional levels, evaluation system data collection forms were submitted in July 1983 by 1,575 regular classroom teachers representing 125 District of Columbia elementary schools. A total of 18,157 students were included in the analysis. Essential data reported included each student's current grade, next semester grade, and next semester reading and mathematics instructional levels according to the Student Progress Plan (SPP). The measure of progress employed, the "next semester" SPP grade level minus the "current" SPP grade level, was keyed to reading progress. The reading materials that were associated with significantly higher amounts of pupil promotion for students in given grade levels who were reading below grade level were as follows: grade one--Houghton Mifflin; grade two--Ginn; grade three--Holt and Harcourt Brace; grade four--American Book; grade five--Holt and American Book; and grade six--Holt and American Book. (CRH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy

ED247547

READING TEXTBOOKS AND STUDENT PROGRESS: A FOLLOW-UP STUDY

Floretta Dukes McKenzie
Superintendent of Schools
Chief State School Officer

August 1984

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

M. Cooper

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CS007762

DISTRICT OF COLUMBIA PUBLIC SCHOOLS

READING TEXTBOOKS AND STUDENT PROGRESS: A FOLLOW-UP STUDY

Prepared by
Division of Quality Assurance
August 1984

ACKNOWLEDGMENTS

The Division of Quality Assurance extends appreciation to the many individuals who have contributed both in general and in terms of this report to the Evaluation System of the District of Columbia Public Schools. Deep gratitude is expressed to the teachers, students, administrators, and others for their continuing cooperation. We also thank the Division of Infomation Resource Management (DIRM) for computer assistance and those consultants — Dr. H. Russell Cort, Jr., Dr. Barry Smith, and Dr. Bruce Jonas — who provided major assistance in the preparation of this follow-up report as well as the preceding report on reading textbooks and student progress.

TABLE OF CONTENTS

	Page
LIST OF TABLES	iv
LIST OF FIGURES	v
SUMMARY	vi
CHAPTER	
I. INTRODUCTION	1
II. PROCEDURES	2
A. Students	2
B. Student Progress	2
C. Reading Materials	3
D. Analysis	4
1. Statistical Procedures	5
2. Unit of Analysis	5
III. RESULTS	6
A. Reading Instructional Level	6
B. Relative Amount of Pupil Promotion	6
C. Relationships of Pupil Promotion to Beginning Level of Reading Instruction	6
D. Significant Differences in Average Amount of Promotion in the Below Level Groups	15
1. Grade One	15
2. Grade Two	15
3. Grade Three	16
4. Grade Four	16
5. Grade Five	16
6. Grade Six	16
IV. DISCUSSION	17
IV. CONCLUSIONS	19

LIST OF TABLES

Table		Page
1.	Ten Reading Materials Listed by Frequency of Use, 1982-83	4
2.	Reading Instuctional Level at beginning of Current Semester (Feb. 1983): Number (N) and Percent (%) of Students, by Grade	7
3.	Amount of Pupil Promotion in June 1983: Number (N) and Percent (%) of Students, by Grade	8

LIST OF FIGURES

Figure		Page
1.	Average Amount of Pupil Promotion for Students Whose Beginning of Semester Level of Reading Instruction was Above, At, or Below Grade Level, By Reading Material: Grade One	9
2.	Average Amount of Pupil Promotion for Students Whose Beginning of Semester Level of Reading Instruction was Above, At, or Below Grade Level, By Reading Material: Grade Two	10
3.	Average Amount of Pupil Promotion for Students Whose Beginning of Semester Level of Reading Instruction was Above, At, or Below Grade Level, By Reading Material: Grade Three	11
4.	Average Amount of Pupil Promotion for Students Whose Beginning of Semester Level of Reading Instruction was Above, At, or Below Grade Level, By Reading Material: Grade Four	12
5.	Average Amount of Pupil Promotion for Students Whose Beginning of Semester Level of Reading Instruction was Above, At, or Below Grade Level, By Reading Material: Grade Five	13
6.	Average Amount of Pupil Promotion for Students Whose Beginning of Semester Level of Reading Instruction was Above, At, or Below Grade Level, By Reading Material: Grade Six	14

SUMMARY

Purpose of the Study: To examine the interactions between particular reading materials used most frequently with students in grades one through six and beginning reading instructional levels based on the amount of progress students made during school year 1982-83.

Materials Assessed: Nine of the ten reading materials on the District of Columbia Public Schools approved textbook list.*

Students: A total of 18,157 students, or approximately 45% of those enrolled in grades one through six, who met the selection criteria.

Findings:

Some reading materials at a given grade level were associated with significantly higher amounts of pupil promotion than some other materials for students whose reading instructional level at the beginning of the semester was below grade level. They were as follows:

- Grade one - Houghton Mifflin;
- Grade two - Ginn;
- Grade three - Holt and Harcourt Brace;
- Grade four - American Book;
- Grade five - Holt and American Book; and
- Grade six - Holt and American Book.

* The sample size was insufficient to assess the tenth reading material.

I. INTRODUCTION

A special study "Reading Textbooks and Student Progress: A Study of Reading Materials Used For Instruction in Grades One Through Six" was published by the Division in June 1984. The purpose of the study was to determine the relationship between particular reading materials used most frequently and the amount of progress students made during school year 1982-83.

Findings indicated that there was no significant difference in the amount of student progress associated with the nine different reading materials on the District of Columbia Public Schools' approved textbook list and that there was no evidence that effectiveness of particular reading materials were significantly influenced by the sex of the student. The data did suggest, however, that a particular material may be more effective or less effective at a given grade level depending on the instructional level of the student.

This follow-up study examines the interactions between beginning instructional levels and the effectiveness of particular reading materials. Is beginning level of instruction in reading differentially related to the expected amount of progress students will make using different reading textbooks for reading instruction? If there is evidence that it is, that evidence could be a factor to consider in the assignment of texts to students.

Data collected in June 1983 on students in grades one through six were used to answer that question. Using data furnished by teachers about the reading materials most frequently used with students and the promotion results for the second semester of school year 1982-83, statistical analyses were made at each grade level of the relationships of reading texts, students' progress and their level of instruction at the beginning of the semester. The reading materials analyzed in the report were those recommended by the Superintendent of schools and approved by the Board of Education for use beginning in school year 1981-82.

II. PROCEDURES

A. Students

Evaluation System data collection forms were submitted in June 1983 by 1,575 regular classroom teachers representing 125 schools with an elementary school program. Teachers reported on 39,497 students in grades one through six.

Data reported that were essential to this study were the student's current grade, next semester grade, and next semester reading and mathematics instructional levels according to the Student Progress Plan (SPP).

A total of 18,157 (45.0%) of the 39,497 students were included in the analyses. Students at each of the six grade levels were included if:

1. They had none of the essential data items missing or invalid on the data collection form;
2. They were absent no more than 16 days during the second semester;
3. They were not non-English speaking;
4. Their current reading materials were the same as or very similar to that used all year;
5. They were not identified special education students; and
6. They were not identified Chapter 1 students receiving Chapter 1 services.

B. Student Progress

The use of standardized test performance as a measure of progress during the year would have been preferable. However, the city-wide testing program did not include pre-post testing.

The measure of progress employed in this study was the "next semester" SPP grade level minus the "current" SPP grade level. To make that measure numerical, the SPP letter designations were converted to a four-step scale of .00, .25, .50 and .75. Thus, when this scale is applied to SPP grade levels two, for example, we have the following numerical values:

SPP Grade Level	Numerical Values
2AT	2.00
2A	2.25
2BT	2.50
2B	2.75

To apply the scale, consider a students whose "current" grade level was 2BT and whose "next semester" grade was 3A. The measure of progress would be 3A minus 2BT, or 3.25 - 2.50 = .75. Another students whose "current" grade level was also 2BT and whose "next semester" grade level was 2B would show less progress (i.e. 2B minus 2BT, or 2.75 - 2.50 = .25).

Since this study was specifically concerned with reading materials, it was desirable to have the "T" grade reflect a deficit in reading when it was a result of a deficiency in reading. Thus, the general grade status formula used was numerical grade plus "A" or "B" minus "T", where "A" = .25, "B" = .75 and "T" = .25, or 0.

For example, a student was shown to have a "current" grade of 4BT with a reading level of 4A and a mathematics level of 4B. For the purpose of this study the "current" grade level would be changed to a numerical value reflecting the reading deficiency (i.e. 4 plus "B" minus "T", or 4 +.75 - .25 = 4.50). By the same token, a student in 4BT whose reading level was 4B and whose mathematics level was 4A would have a higher numeric grade value (i.e. 4 plus "B" minus "T", 4 +.75 - 0 = 4.75). Thus, the measure of student progress used in this study was keyed to reading progress.

C. Reading Materials

The study was intended to assess the ten reading materials on the approved textbook list. Nine of the materials were assessed. The tenth material was not assessed due to an insufficient sample size.

The ten materials, listed in Table 1 according to the frequency of use accounted for 82% of the 39,497 students in grades one through six.

TABLE 1

TEN APPROVED READING MATERIALS LISTED BY FREQUENCY OF USE, 1982-83

Reading Materials (Publishers)	Number of Students
1. Ginn	7,573
2. MacMillan	7,545
3. Lippincott	3,664
4. Harcourt Brace and Jovanovich	3,039
5. American Book Company	2,849
6. Houghton Mifflin	2,247
7. Holt Rinehart and Winston	2,228
8. Scott Foresman	1,693
9. Allyn and Bacon	1,263
10. Harper and Row	258

D. **Analysis**

Analyses were made, for grades one through six, of reading materials and relative amount of pupil promotion in June 1983, in relation to beginning of semester (February 1983) level of reading instruction. At each grade, some materials were found to be associated with statistically significantly greater relative amounts of pupil promotion than other materials for certain types of students. Typically those were students whose beginning level of reading instruction was below grade level. The operational implications are discussed. Cautions in the application of the results are also noted.

1. **Statistical Procedures.** On the basis of results of a cross-tabulation of amount of promotion by beginning of semester level of reading instruction, three groups were specified at each grade level:

   (1) students whose beginning level of reading instruction was one semester or more below grade level (Below Level);

   (2) those students whose beginning level of reading instruction was at grade level (At Level); and

   (3) those students whose beginning level of reading instruction was one semester or more above grade level (Above Level).

The average amount of promotion for each of these groups was calculated for the set of students associated with each of the nine different reading materials. That was done for each grade, and the results plotted as bar graphs.

Further analysis was then made of the Below Level group at each grade level for reasons discussed in chapter IV. A one-way analysis of variance (ANOVA) was done for all reading materials groups at each grade that had a sample size of 30 or more students. A Bartlett's test of homogeneity of variance was done for each ANOVA. If the F-ratio was significant at the .05 level, and if the test of homogeneity of variance was passed (as they both were in all 6 cases), a simultaneous 95% confidence limit (critical value) was computed, using Tukey's hsd (honestly significant difference) method. Using that critical value, a determination was made of reading materials groups that were significantly higher or lower than the others in average amount of promotion.

2. **Unit of Analysis.** The unit of analysis was the individual student. In the previous special reading textbook report the unit of analysis was the classroom group, and measures of variables were group means. Because the unit of analysis in this follow-up study was the individual, with measures of variables being individual measures instead of group means, the results of the analyses done for the two studies are neither identical nor directly comparable. The two studies were done for two different purposes, with the aim of answering two different questions.

III. RESULTS

A. Reading Instruction Level

There was a wide range in reading instruction levels at the beginning of the spring semester (February 1983). The frequency and percent distributions of these levels for each grade are shown in Table 2.

B. Relative Amount of Pupil Promotion

Table 3 gives the frequency and percent distributions of the amount of pupil promotion in June 1983 (see Chapter II, Section B). It will be recalled that a promotion of one full semester is represented by a value of .50. It may easily be determined from Table 3 that the great majority of pupils were promoted or advanced one or more semesters in June 1983.

C. Relationships of Pupil Promotion to Beginning Level of Reading Instruction

Results of the analysis of the average amount of promotion for the Below Level, At Level and Above Level groups for grades one through six are shown in Figures 1 - 6, respectively. The figures are bar graphs of the average amount of promotion for each reading material group of students in each of the three instructional level groups. The figures also show the number of students included in each reading material group (numbers are in parenthesis). Note that in Figure 6 there were no students shown with a beginning level of instruction above grade level (Above Level group). That is because the data collection form (Form #301) did not provide for such a contingency. Therefore, the students classified as At Grade Level in Figure 6 also include those students who were Above Grade Level.

In Figures 1 - 6, average amounts of promotion are rounded to the nearest hundredth. The vertical line at .50 in each graph marks the point of promotion of one full semester.

TABLE 2

READING INSTRUCTION LEVEL AT BEGINNING OF CURRENT SEMESTER (FEB. 1983): NUMBER (N) AND PERCENT (%) OF STUDENTS, BY GRADE

Beginning Reading Instruction Level		Grade 1	2	3	4	5	6
1A	N	720	39	4	1	3	—
(1.25)*	%	21.2	1.2	0.1	0.03	0.1	—
1B	N	2,652	204	14	5	3	—
(1.75)	%	78.1	6.3	0.5	0.2	0.1	—
2A	N	13	734	76	2	3	1
(2.25)	%	0.4	22.5	2.5	0.06	0.1	0.05
2B	N	8	2,194	200	24	7	1
(2.75)	%	0.2	67.4	6.5	0.7	0.2	0.05
3A	N	1	60	706	117	36	5
(3.25)	%	0.03	1.8	22.8	3.5	1.2	0.2
3B	N	1	17	1,999	298	41	9
(3.75)	%	0.03	0.5	64.6	8.9	1.4	0.4
4A	N	—	9	60	758	122	32
(4.25)	%	—	0.3	1.9	22.9	4.0	1.5
4B	N	—	—	31	2,033	262	76
(4.75)	%	—	—	1.0	61.3	8.7	3.7
5A	N	—	—	6	36	575	102
(5.25)	%	—	—	0.2	1.08	19.0	4.9
5B	N	—	—	—	37	1,880	218
(5.75)	%	—	—	—	1.1	62.1	10.5
6A	N	—	—	—	2	58	268
(6.25)	%	—	—	—	0.06	1.9	13.0
6B	N	—	—	—	4	35	1,355
(6.75)	%	—	—	—	0.1	1.2	65.6
	Total:	3,395	3,257	3,096	3,317	3,025	2,067

* Numbers in parentheses are the scale values used in this study for instruction levels.

TABLE 3

AMOUNT OF PUPIL PROMOTION IN JUNE 1983: NUMBER (N) AND PERCENT (%) OF STUDENTS, BY GRADE

Amount of Pupil Promotion		Grade 1	2	3	4	5	6
.00	N	356	292	248	203	174	83
	%	10.47	8.9	8.0	6.1	5.7	4.0
.25	N	215	162	164	127	90	112
	%	6.3	5.0	5.3	3.8	3.0	5.4
.50*	N	2,737	2,652	2,505	2,748	2,504	1,420
	%	80.6	81.4	80.9	82.8	82.8	68.7
.75	N	23	33	36	72	54	278
	%	0.7	1.0	1.2	2.2	1.8	13.4
1.00	N	63	112	134	159	184	123
	%	1.9	3.4	4.3	4.8	6.1	6.0
1.25	N	—	2	6	4	3	51
	%	—	0.1	0.2	0.1	0.1	2.5
1.50	N	1	3	3	2	10	—
	%	0.03	0.1	0.1	0.1	0.3	
1.75	N	—	1	—	1	3	—
	%	—	0.03	—	0.03	0.1	—
2.00	N	—	—	—	1	3	—
	%	—	—	—	0.03	0.1	
	Total:	3,395	3,257	3,096	3,317	3,025	2,067

* One semester = .50 (See Chapter II, Section B)

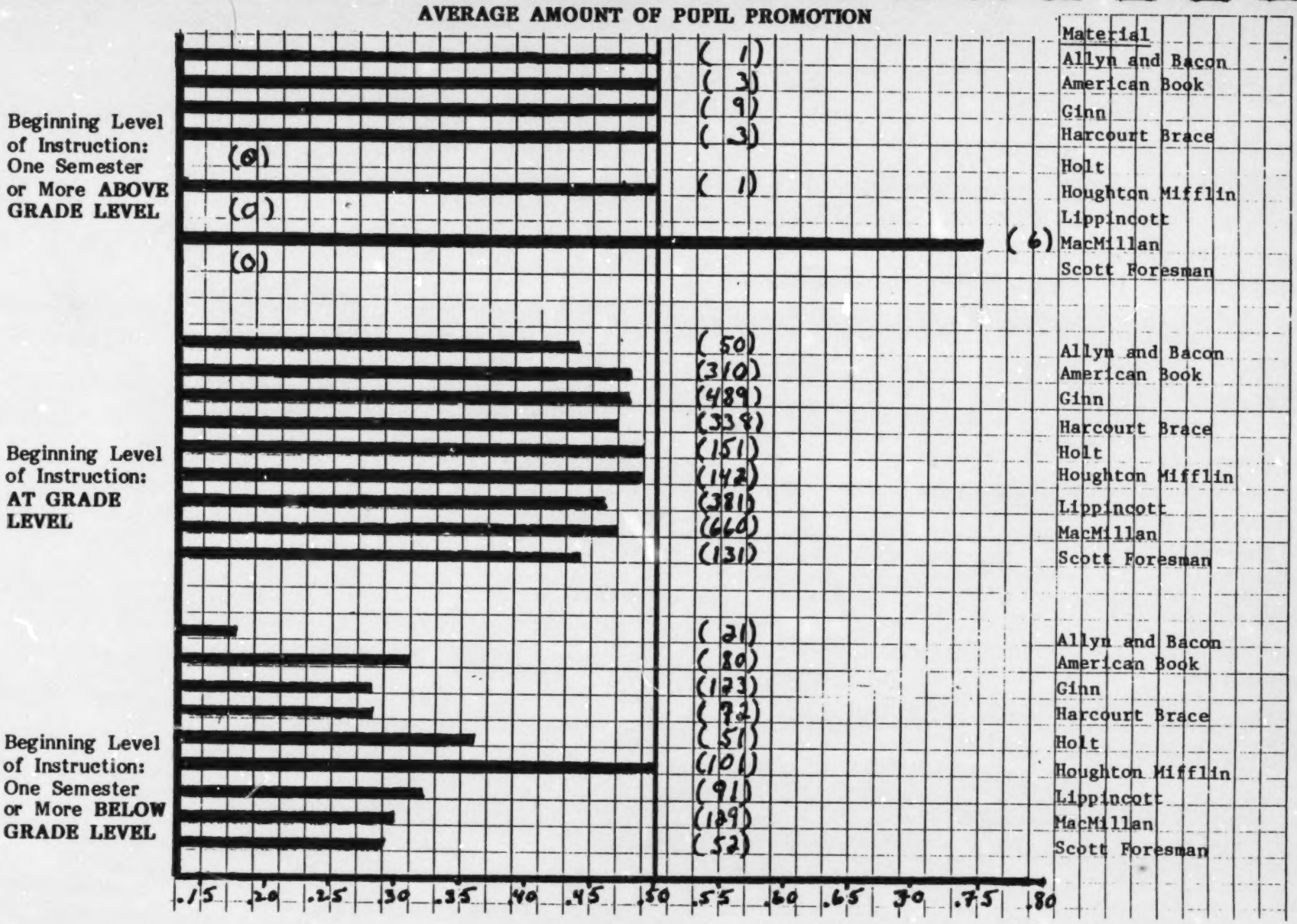

Figure 1. Average Amount of Pupil Promotion for Students Whose Beginning of Semester Level of Reading Instruction was Above, At, or Below Grade Level, By Reading Material: Grade One

Note: Number of students in each group is shown in parentheses.

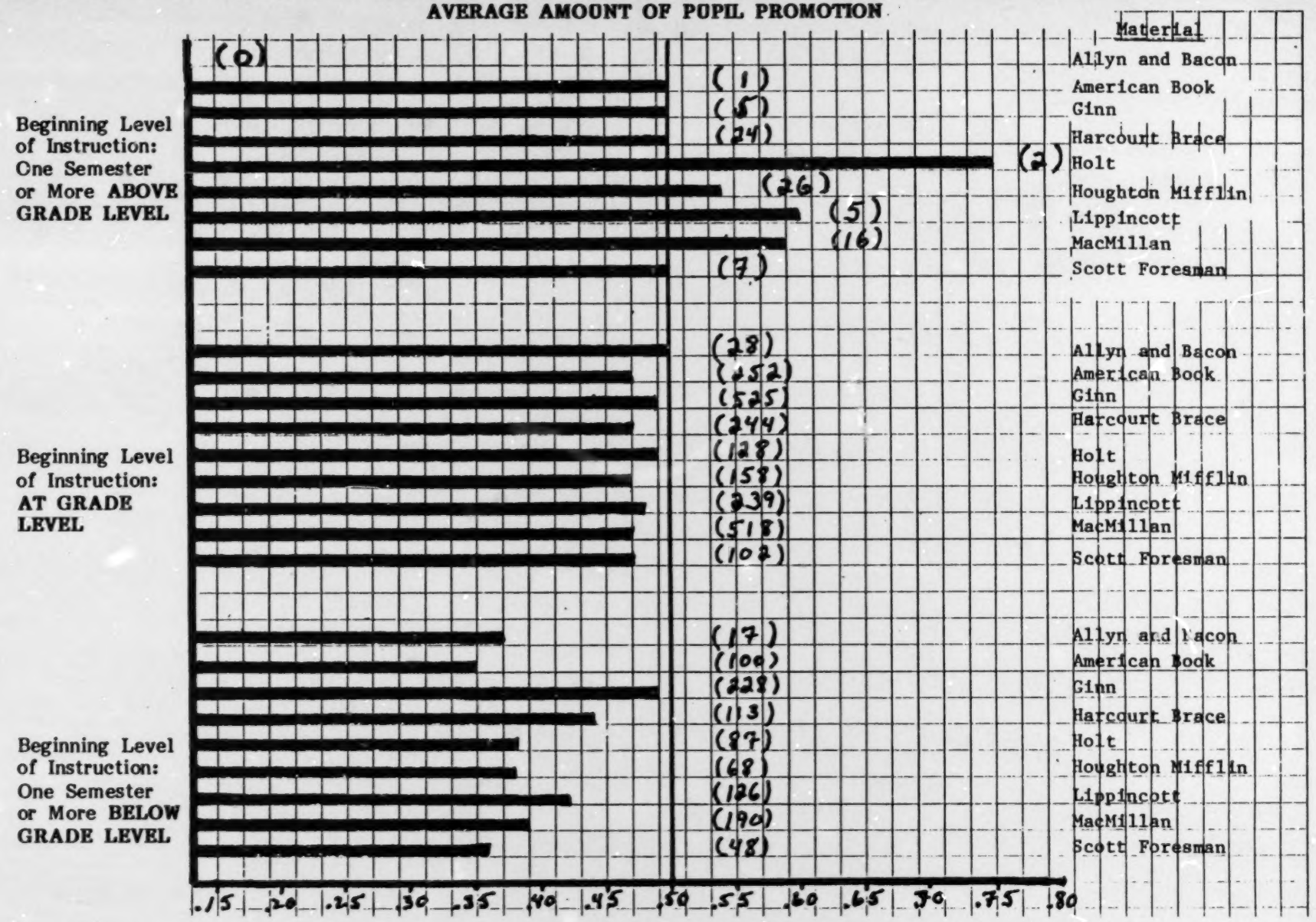

Figure 2. Average Amount of Pupil Promotion for Students Whose Beginning of Semester Level of Reading Instruction was Above, At, or Below Grade Level, By Reading Material: Grade Two

Note: Number of students in each group is shown in parentheses.

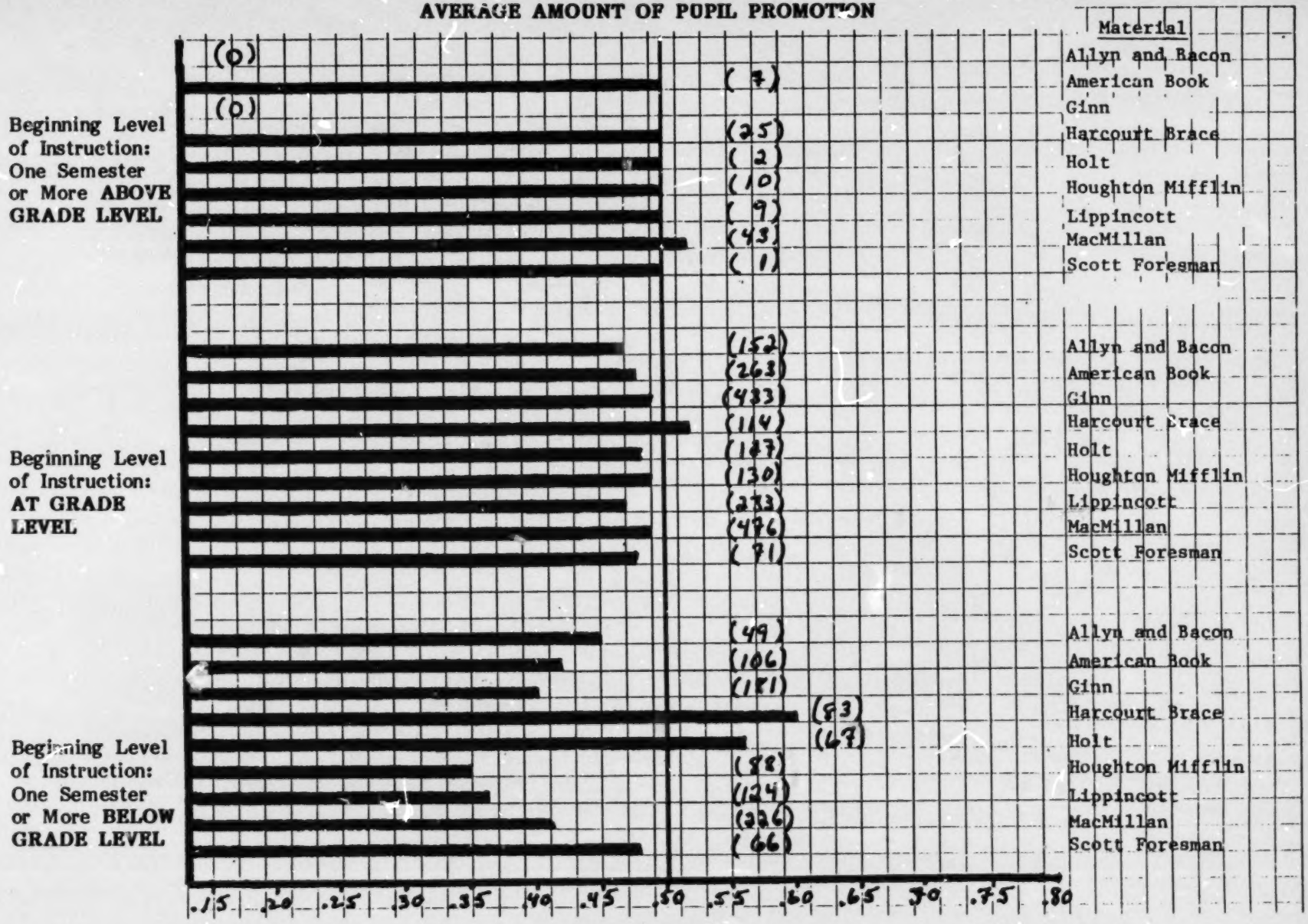

Figure 3. Average Amount of Pupil Promotion for Students Whose Beginning of Semester Level of Reading Instruction was Above, At, or Below Grade Level, By Reading Material: Grade Three

Note: Number of students in each group is shown in parentheses.

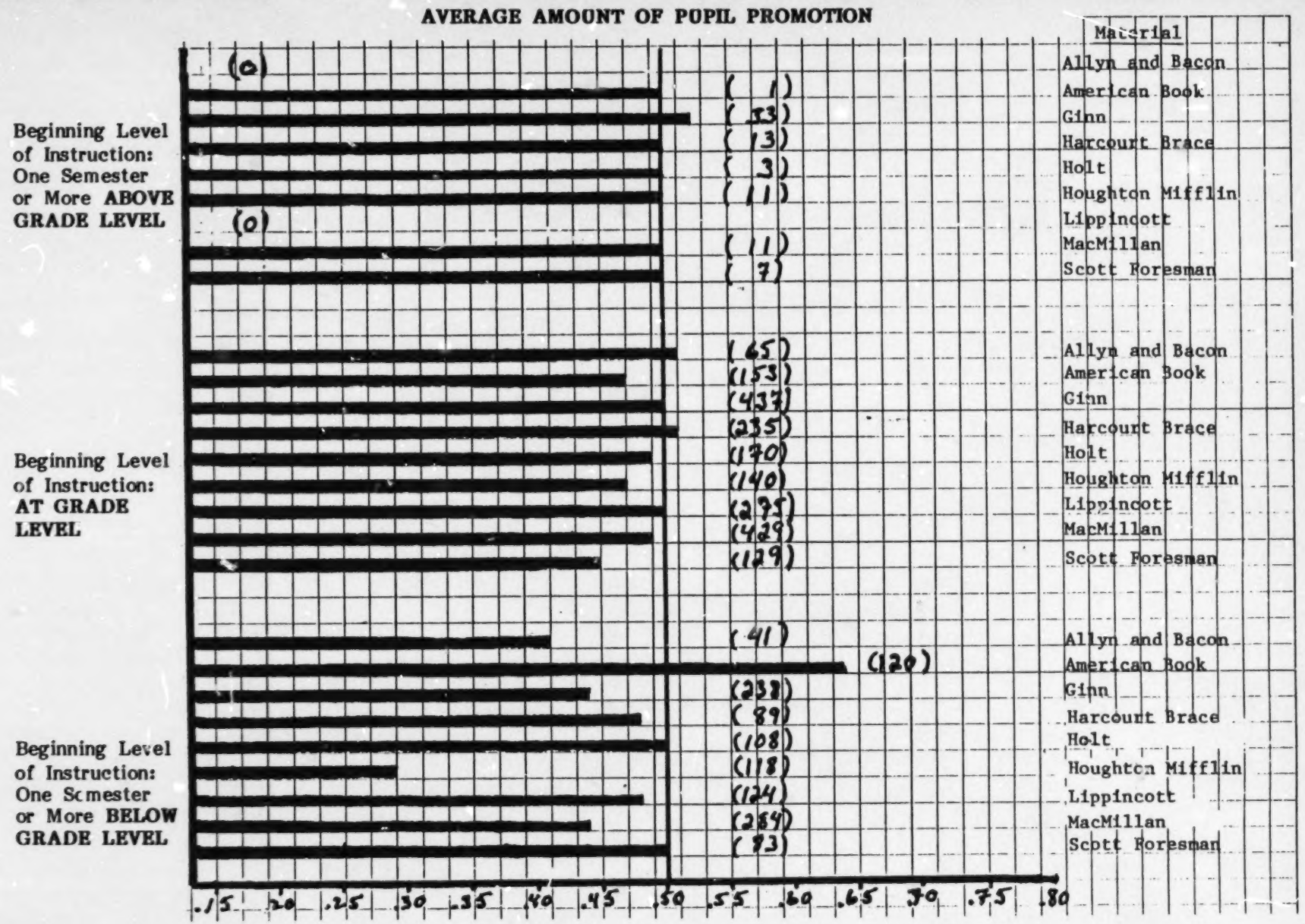

Figure 4. Average Amount of Pupil Promotion for Students Whose Beginning of Semester Level of Reading Instruction was Above, At, or Below Grade Level, By Reading Material: Grade Four

Note: Number of students in each group is shown in parentheses.

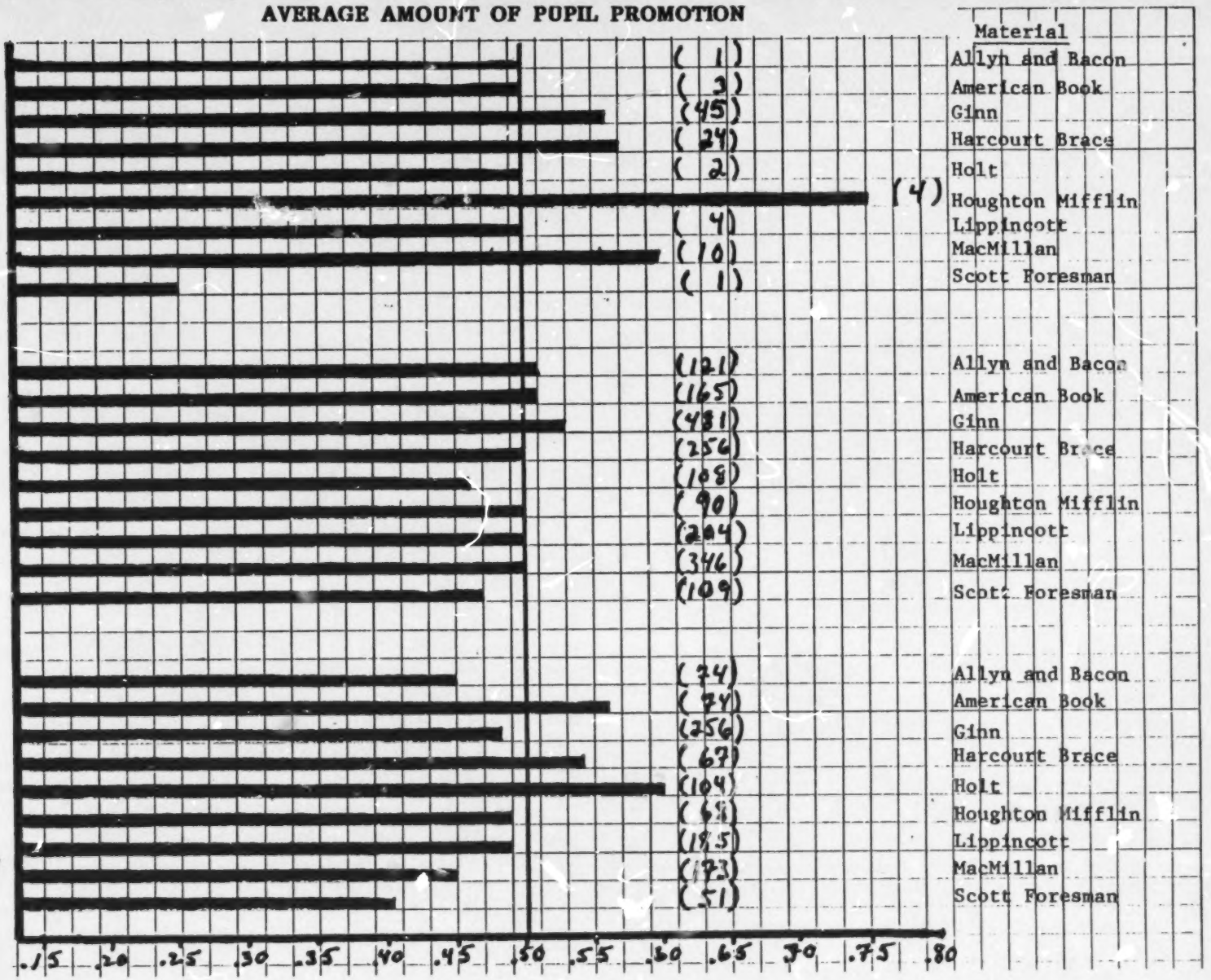

Figure 5. Average Amount of Pupil Promotion for Students Whose Beginning of Semester Level of Reading Instruction was Above, At, or Below Grade Level, By Reading Material: Grade Five

Note: Number of students in each group is shown in parentheses.

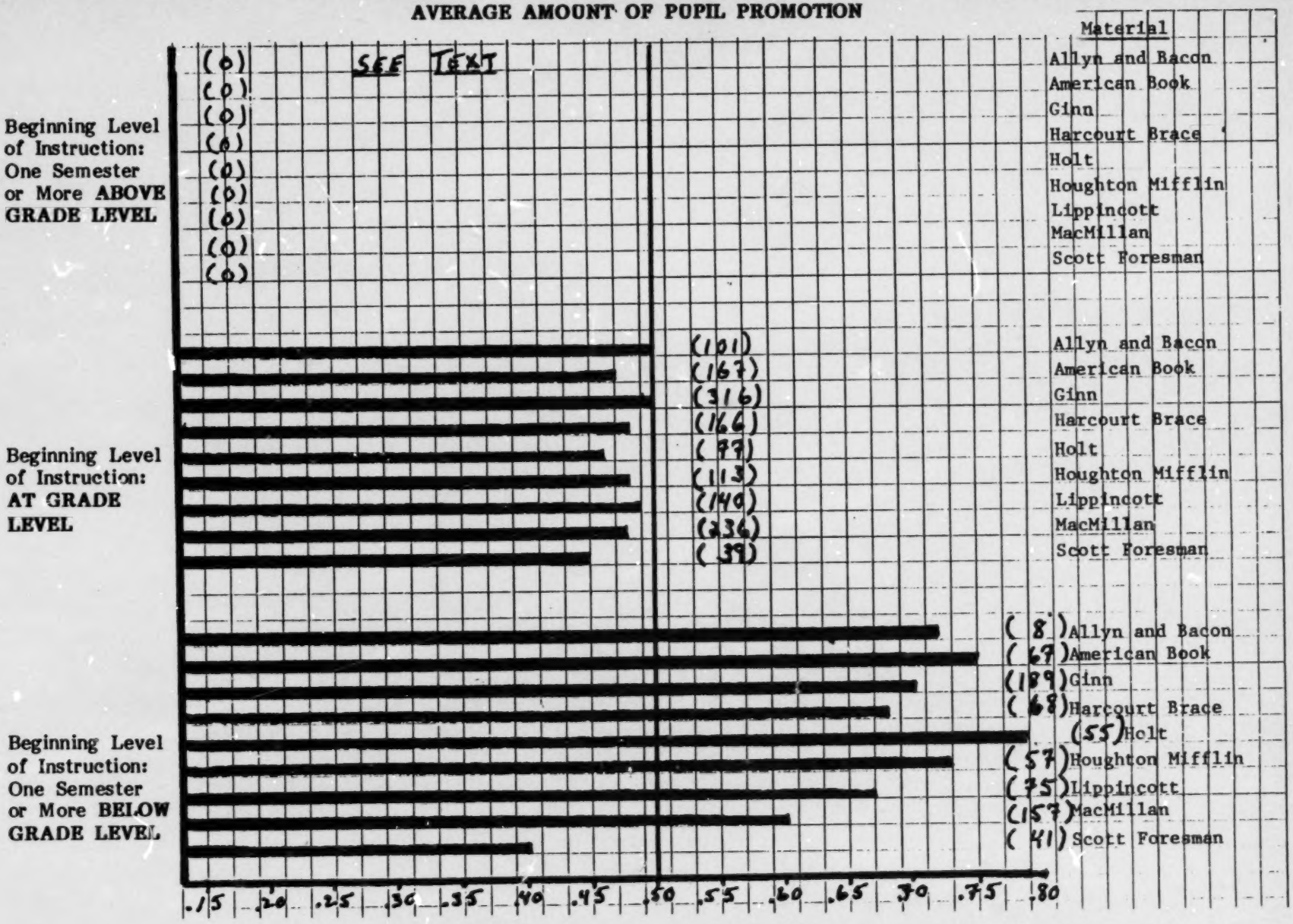

Figure 6. Average Amount of Pupil Promotion for Students Whose Beginning of Semester Level of Reading Instruction was Above, At, or Below Grade Level, By Reading Material: Grade six

Note: Number of students in each group is shown in parentheses.

D. **Significant Differences in Average Amount of Promotion in the Below Level Groups.**

The analysis of variance done of the Below Level group[1/] was significant at or beyond the .01 level for each of the six grades, and variances were accepted as homogeneous in each case. The critical value (based on Tukey's hsd method) of the significance of a difference between all reading materials groups in the ANOVA at each grade level was as follows:

Grade	Critical Value
1	.1445
2	.1320
3	.1409
4	.1217
5	.1407
6	.1607

Thus, for example, in grade one, any two Below Level reading material groups (of more than 30 students) separated by .1445 (essentially, .14) points or more may be considered statistically different at the 95% level of confidence.[2/] The results of these analyses are as follows (the reader should also examine the appropriate Figure when reading these results).

1. **Grade one.** The Houghton Mifflin group showed significantly more promotion on the average than all other groups except the Holt group (the Allyn and Bacon group is not included because it had less than 30 students).

2. **Grade Two.** The Ginn group showed significantly more promotion on the average than the American Book group (Allyn and Bacon group not included because it had less than 30 students).

1/ Dependent variable: amount of promotion; independent variable: reading material (for material groups having more than 30 students each); unit of analysis: the student.

2/ In applying hsd critical values for this study, we used 4-place means and critical values. The means in Figures 1 - 6 are rounded to two places. Thus, there will be a few cases in which conclusions we drew will be different from those based strictly on the use of the Figures.

3. **Grade Three.** The Harcourt, Brace, Jovanovich group showed a significantly higher amount of promotion on the average than all other groups except the Holt and Scott Foresman groups; and the Holt group showed a significantly higher amount of promotion on the average than the following groups: Ginn, Houghton Mifflin, Lipincott, and MacMillan.

4. **Grade Four.** The American Book group showed a significantly higher amount of promotion on the average than all other groups; and the Houghton Mifflin group showed a significantly lower amount of promotion than all other groups except the Allyn and Bacon group.

5. **Grade Five.** The Holt group showed a sigificantly higher amount of promotion on the average than the Allyn and Bacon, MacMillan, and Scott Foresman groups; and the American Book group showed a significantly higher amount of promotion on the average than the Scott Foresman group.

6. **Grade Six.** The Holt group showed a significantly higher amount of promotion on the average than the MacMillan and Scott Foresman groups; and the American Book group showed a significantly higher amount of promotion on the average than the Scott Foresman group. Again, the Allyn and Bacon group was not included because of its small sample size.

IV. DISCUSSION

In evaluating the results given in Figures 1 - 6, the reader should not draw even tentative inferences or conclusions about very small groups of students (as a rule of thumb here, any group of less than 30 students). The majority of the Above Level groups do not meet that criterion. They were included in the Figures for the sake of completeness only.

Examination of Figures 1 - 6 shows that at each grade level, the following generalizations seem to be true:

1. For At Level groups, the average amount of pupil promotion associated with different reading materials is at or near .50 (one semester) and differs very little from reading material group to reading material group.
2. Except at grade six, and to a lesser degree at grade five, the average amount of pupil promotion in the Below Level groups is typically less than for the At Level groups, and tends to show a greater range of differences between two or more materials groups (even if groups with less than 30 students are ignored).

Consider Figure 1 (grade one) as an example. There, in the At Level group, the greatest difference between means was .05. That is, the highest means (the Holt and Houghtor Mifflin groups) were .49. The lowest means (the Allyn and Bacon and Scott Foresman groups) were .44. Thus the difference between highest and lowest was .49 minus .44 or .05 (or $1/10^{th}$ of a semester). Not shown in the figure, but derivable from it, is the overall mean for the At Level group: .47, based on a total of 2,652 students in that group.

In the Below Level group in grade one the largest difference between means (ignoring the small Allyn and Bacon group of less than 30) was .22, or almost one half semester, (Houghton Mifflin group: .50 minus Ginn and Harcourt Brace groups: .28). The overall mean was .33, based on 699 students.

Grades two through five show similar patterns, although not necessarily involving the same reading materials groups. In grade five (see Figure 5), the overall avarage of the Below Level group (.49) was barely less than that of the At Lever group (.51).

In grade six (Figure 6), the pattern of the Below Level group showing less average amount of pupil promotion than the At Level group is reversed dramatically (.67 and .48, respectively). The pattern of greater variability among material group means in the Below Level group than in the At Level group is continued, however.

The critical values of significance of differences between means in the Below Level groups enable one to determine statistically significant differences. Such differences may or may not be considered significant operationally. The average critical value for all grades was about .14. That is the equivalent of slightly more than one quarter of a semester difference (.14/.50 = .28 or 28%) in average amount of promotion.

Decisions about the selection and assignment of reading materials need to weigh a number of factors. The results of this study provide one such factor for consideration in the instruction of students who are below level in reading.

V. CONCLUSIONS

The results of this study suggest that some reading materials at a given grade level may be associated with larger relative amounts of pupil promotion than others for some types of students. Such students, in the analysis of 1983 data, tend to have been those whose level of reading instruction at the beginning of the spring semester was one semester or more below grade level. While these results may not suggest a general policy decision, they do provide some operational implications for teachers and others. In deciding on what reading materials to use with students whose instructional levels are below grade level, teachers and others should at least consider those materials that here were associated, on the average, with larger relative amounts of promotion.

There are, however, some cautions to be observed. First, while the results of this study provide a factor to be considered in a reading material assignment decision, there are, of course, other important factors also to be considered.[3/] Second, the results reported here indicated an association of particular materials with more progress under certain conditions. They do not imply that the materials per se caused the greater progress; nor do they imply that similar results will occur automatically, or with all below grade level students. Third, the results apply to the 18,157 students that met the inclusion criteria of this study, as described in Chapter II, Section A. Further study will be needed to:

(1) determine the relevance of these results to other special groups of students; and

(2) evaluate the stability of these results in subsequent years (evaluation using pre-post test data would be preferable).

With such cautions observed, the results reported here may provide useful guidance in a difficult area of operational or program decision-making.

3/ Factors such as teacher preparation, experience, familiarity with particular materials, teaching method, availability of aides, integration of reading instruction with other subjects, and management of instruction are important and worthy of study in conjunction with reading materials.